

## WHAT IS CLAIMED

1. 1. An integrated digital television (DTV) diagnostic instrument comprising:  
2 a video display device (VDD);  
3 a controller to receive a DTV signal in the form of a stream of packets and to  
4 generate a graphical depiction on said VDD of a plurality of individual packets  
5 representing said stream.
  
1. 2. The instrument of claim 1, wherein said controller is embodied by a processor  
2 running software.
  
1. 3. The instrument of claim 1, further comprising:  
2 DTV circuitry (AV) to receive a DTV signal and to reconstruct said stream of  
3 packets representing said DTV signal;  
4 wherein said controller receives said stream of packets from said DTV circuitry.
  
1. 4. The instrument of claim 3, further comprising an antenna to receive a broadcast  
2 of said DTV signal, wherein said DTV circuitry is connected to receive said DTV signal  
3 from said antenna.
  
1. 5. The instrument of claim 3, further comprising:  
2 recording circuitry (R) to record said stream of packets from said DTV circuitry;  
3 wherein said controller is operable to generate said graphical depiction based  
4 upon the recorded stream of packets.
  
1. 6. The instrument of claim 3, wherein said controller is operable to drill down into  
2 the contents of individual ones of said stream of packets and to generate a display of  
3 such contents.

1 7. The instrument of claim 1, wherein said graphical depiction on said VDD of said  
2 stream of packets takes the form of a matrix of geometric shapes, each geometric  
3 shape representing a packet.

1 8. The instrument of claim 7, wherein each geometric shape is a square.

1 9. The instrument of claim 7, wherein each geometric shape has an appearance  
2 that is indicative of what type the corresponding packet is.

1 10. The instrument of claim 9, wherein colors are assigned to said geometric shapes  
2 to denote the types of the corresponding packets, respectively.

1 11. The instrument of claim 10, wherein said controller is operable to generate a  
2 graphical depiction on said VDD of a legend explaining color and packet type relations.

1 12. The instrument of claim 11, wherein each color in said legend is depicted in the  
2 form of said geometric shape, and each geometric shape is operable as a pointing-  
3 device-clickable button; and

4 wherein said controller is operable, in response to a user clicking on one of said  
5 geometric shapes, to present an interface by which the color assigned to the geometric  
6 shape can be changed by said user.

1 13. The instrument of claim 10, wherein said stream of packets representing said  
2 DTV signal contains multiple video programs, and wherein different shades of a color  
3 representing a type of packet are assigned to denote which one of said multiple video  
4 programs corresponds to the geometric shape.

1 14. The instrument of claim 10, wherein said controller adheres to at least one of the  
2 following color definitions:

3 a green geometric shape corresponds to a video packet;  
4 a cyan geometric shape corresponds to an audio packet;

5           a black geometric shape corresponds to a null packet;  
6           a yellow geometric shape corresponds to a data packet;  
7           a pink shape corresponds to a program and system information protocol (PSIP)  
8 packet;  
9           a gray geometric shape corresponds to an unknown type of packet;  
10          a white geometric shape corresponds to a PAT packet; and  
11          an orange geometric shape corresponds to one of a PMT packet, an NIT packet  
12 or a CAT packet.

1       15. The instrument of claim 9, wherein a plurality of geometric patterns is  
2 superimposed on predetermined ones, respectively, of said geometric shapes to denote  
3 qualities of the corresponding packets, respectively.

1       16. The instrument of claim 15, wherein said controller adheres to at least one of the  
2 following geometric pattern definitions:

3           a geometric shape for which half is black denoting that the corresponding packet  
4 has PCR;

5           a geometric shape having a superimposed vertical line denoting that the  
6 corresponding packet is the start of a payload;

7           a geometric shape having a superimposed horizontal line denoting that the  
8 corresponding packet is a packet with adaptation;

9           a geometric shape having superimposed diagonal intersecting lines denoting that  
10 the corresponding packet has a transport error and

11          a geometric shape for which half is pink denoting that the corresponding packet  
12 has a packet adaptation data error.

1       17. The instrument of claim 7, wherein each geometric shape in said matrix thereof is  
2 operable as a pointing-device-clickable button.

1 18. The instrument of claim 17, wherein said controller is operable, in response to a  
2 user clicking on one of said geometric shapes, to display contents of the corresponding  
3 packet on said VDD.

1 19. The instrument of claim 7, wherein said controller is operable to depict a break in  
2 said matrix where previously displayed geometric shapes are replaced with new  
3 geometric shapes in order to represent the streaming nature of said DTV signal.

1 20. The instrument of claim 19, wherein said break takes the form of a blank row in  
2 said matrix.

1 21. The instrument of claim 20, wherein said controller is operable to move said  
2 blank row through said matrix.

1 22. The instrument of claim 7, wherein a packet map display sub-area forms a part of  
2 a total display area on said VDD, said packet map display sub-area being smaller than  
3 is needed to display an entire stream of packets; and

4 wherein said controller is operable to enable a user to scroll the portion of said  
5 matrix depicted in said packet map display sub-area.

1 23. In an integrated digital television (DTV) diagnostic instrument having a video  
2 display device (VDD), a method of generating graphical depictions on said VDD of a  
3 stream of packets representing a DTV signal, the method comprising:

4 providing a DTV signal in the form of a stream of packets; and

5 generating a graphical depiction on said VDD of a plurality of individual packets  
6 representing said stream.

1 24. The method of claim 23, wherein the stream is provided by retrieving a recorded  
2 portion of a DTV signal from memory.

1 25. The method of claim 23, wherein the stream is provided by receiving a broadcast  
2 of a DTV signal.

1 26. The method of claim 23, wherein said graphical depiction on said VDD of said  
2 stream of packets takes the form of a matrix of geometric shapes, each geometric  
3 shape representing a packet.

1 27. The method of claim 23, wherein colors are assigned to said geometric shapes to  
2 denote the types of the corresponding packets, respectively.

1 28. The method of claim 23, wherein said controller is operable to generate a  
2 graphical depiction on said VDD of a legend explaining color and packet type relations.

1 29. The method of claim 23, wherein a plurality of geometric patterns is  
2 superimposed on predetermined ones, respectively, of said geometric shapes to denote  
3 qualities of the corresponding packets, respectively.

1 30. The method of claim 23, wherein each geometric shape in said matrix thereof is  
2 operable as a pointing-device-clickable button; and  
3 wherein, in response to a user clicking on one of said geometric shapes,  
4 contents of the corresponding packet are displayed on said VDD.

1 31. The method of claim 23, wherein a break in said matrix is depicted at a location  
2 where previously displayed geometric shapes are replaced with new geometric shapes  
3 in order to represent the streaming nature of said DTV signal;  
4 wherein said break takes the form of a blank row in said matrix; and  
5 wherein said blank row is moved through said matrix.

1 32. A computer-readable article of manufacture having embodied thereon software  
2 comprising a plurality of code segments to generate graphical depictions on a video

3 display device (VDD) of a stream of packets representing a DTV signal, the computer-  
4 readable code segments comprising:

5 a first segment to receive a DTV signal in the form of a stream of packets; and

6 a second code segment to generate a graphical depiction on said VDD of a  
7 plurality of individual packets representing said stream.

1 33. The computer-readable code segments of claim 32, wherein said second  
2 segment is operable to receive said stream of packets from DTV circuitry that receives a  
3 DTV signal from an antenna and reconstructs said stream therefrom.

1 34. The computer-readable code segments of claim 32, wherein said second  
2 segment is operable to generate said graphical depiction based upon a recorded stream  
3 of packets.

1 35. The computer-readable code segments of claim 32, wherein said graphical  
2 depiction on said VDD of said stream of packets takes the form of a matrix of geometric  
3 shapes, each geometric shape representing a packet.

1 36. The computer-readable code segments of claim 32, wherein colors are assigned  
2 to said geometric shapes to denote the types of the corresponding packets,  
3 respectively.

1 37. The computer-readable code segments of claim 32, wherein said second  
2 segment is operable to also generate a graphical depiction on said VDD of a legend  
3 explaining color and packet type relations.

1 38. The computer-readable code segments of claim 32, wherein a plurality of  
2 geometric patterns is superimposed on predetermined ones, respectively, of said  
3 geometric shapes to denote qualities of the corresponding packets, respectively.

1 39. The computer-readable code segments of claim 32, wherein each geometric  
2 shape in said matrix thereof is operable as a pointing-device-clickable button; and  
3 wherein said second segment is operable, in response to a user clicking on one  
4 of said geometric shapes, to display contents of the corresponding packet on said VDD.

1 40. The computer-readable code segments of claim 32, wherein said second code  
2 segment is operable to depict a break in said matrix where previously displayed  
3 geometric shapes are replaced with new geometric shapes in order to represent the  
4 streaming nature of said DTV signal;

5       wherein said break takes the form of a blank row in said matrix; and  
6       wherein said second code segment is operable to move said blank row through  
said matrix.